

NOTES ON BROMELIACEAE, XVIII

Lyman B. Smith

TROPICAL AMERICA

GRAVISIA

A study of fresh material has shown that Gravisia in north-eastern Brazil consists of more taxa than were previously recognized, and that detailed field observations may reveal still others. Our present admittedly incomplete knowledge may be summarized as follows:

1. Flowers on elongate axes, forming narrow spikes.
2. Floral bracts minute, not covering the geniculate rhachis.
 1. G. constantinii
 2. G. lanjouwii
1. Flowers on short axes, forming stout spikes or fascicles.
 3. Spines of the floral bracts much longer than the body of the bract.....G. brassicoides
 3. Spines of the floral bracts much shorter than the body of the bract.....G. fosteriana
4. Lower branches of the inflorescence equaling to much exceeding the primary bracts.
 4. G. rubens
5. Floral and secondary bracts firm, even or nearly so, yellow, 2 cm. long; sepal-wing distended basally.
 5. G. aquilega var. aquilega
 6. G. aquilega var. chrysocoma
1. GRAVISIA CONSTANTINII Mez, Repert. Sp. Nov. Fedde 14:245. 1916.
BRAZIL: Indefinite, from cultivation.
2. GRAVISIA LANJOUWII L. B. Smith, Act. Bot. Neerlandica 5:93, fig. 3. 1956.
SURINAME.
3. GRAVISIA BRASSICOIDES (Baker) Mez in DC. Monogr. Phan. 9:173. 1896.

Aechmea brassicoides Baker, Journ. Bot. 20:329. 1882.
BRITISH GUIANA.

4. GRAVISIA FOSTERIANA L. B. Smith, sp. nov.

A G. aquilega (Salisb.) Mez, cui affinis, bracteis primariis infimis quam ramis brevioribus vel eos aequantibus, bracteis secundariis florigerisque laevibus aureis, floribus haud fasciculatis differt.

Flowering plant over 1 meter high; leaves over 8 dm. long, bearing appressed white scales with brown centers; sheaths broadly subelliptic, ca. 2 dm. long, brown; blades ligulate, broadly acute and cuspidate, to 9 cm. wide, subdensely serrate with dark spines 3 mm. long, faintly banded (! Foster); scape to 1 cm. in diameter, red (! Foster), white-flocculose, soon glabrous; scape-bracts imbricate, large, elliptic, entire, subcoriaceous when dry, densely pale-lepidote; inflorescence tripinnate, to 35 cm. long, lax except near the apex; axes rather slender, soon glabrous; primary bracts like the scape-bracts but much smaller, typically much shorter than the lower branches but equaling them in small specimens; branches spreading, the lowest typically enlarged to 15 cm. long and with the spikes somewhat separated; floral axes short but distinct; flowers in broad digitately clustered spikes; floral bracts broadly ovate, mucronate, 20 mm. long, exceeding the ovary, entire, broadly convex, carinate toward apex, even or nearly so, glabrous, yellow; sepals asymmetric with a broad wing that is distended and auriculate at base, 15 mm. long including the short mucro, short-connate; petals appendaged; ovary glabrous, the epigynous tube 3 mm. high. Pl. I, fig. 1: Basal branch of inflorescence x 1/2; fig. 2: Sepal x 1.

Type in the Gray Herbarium, collected on ground in low moist places, 1/4 mile from ocean, Portoa, State of Bahia, Brazil, June 10, 1939, by M. B. and R. Foster (No. 84).

BRAZIL: Bahia: Dunes, Boca do Rio, near Salvador, May 4, 1952, L. B. Smith, Seabra & Leal Costa 7114 (US). In sand in thickets of Coccoloba, on coast 10 miles north of Salvador, May 29, 1939, M. B. & R. Foster 45 (GH, small specimen with short inflorescence). Agua Preta, 1939, M. B. & R. Foster 60 (US, flowered in cultivation, inflorescence small, axes flocculose at anthesis).

5. GRAVISIA RUBENS L. B. Smith, sp. nov.

A G. aquilega (Salisb.) Mez, cui affinis, bracteis primariis infimis quam ramis brevioribus, bracteis secundariis florigerisque subchartaceis rubentibus, floribus haud fasciculatis differt.

Flowering plant over 6 dm. high; leaves (only one known) ca. 55 cm. long, bearing appressed white scales with brown centers; sheaths broadly subelliptic, scarcely distinct from the blades, ca. 2 dm. long, dark brown; blades ligulate, broadly rounded and cuspidate, to 12 cm. wide, subdensely serrate with dark spines 3 mm. long; scape over 7 mm. in diameter, soon glabrous; scape-bracts imbricate, large, elliptic, entire, subcoriaceous when dry, densely pale-lepidote; inflorescence tripinnate, 35 cm. long, lax; axes soon glabrous; primary bracts like the scape-

bracts, shorter than the branches, deep rose; branches spreading-ascending, to 14 cm. long, the lowest with the spikes somewhat separated; spikes broadly fusiform; floral bracts broadly ovate, mucronulate, 30 mm. long, subchartaceous, strongly nerved, broadly convex, slightly carinate toward apex, glabrous, the outer ones deep rose with narrow yellow margin, the inner progressively paler; sepals asymmetric with a large semi-elliptic wing that is cuneate at base, 22 mm. long including the short mucro, short-connate; petals appendaged; pollen grains globose, multiporate; ovary glabrous, the epigynous tube 2.5 mm. high. Pl. I, fig. 3: Basal branch of inflorescence x 1/2; fig. 4: Sepal x 1.

Type in the U. S. National Herbarium, from cultivation in the Jardin Botanique de Montréal (No. 2284-57). Supposedly this came from Mulford Foster's Brazilian collections, but so far I can find nothing in his herbarium vouchers that resembles it.

6. GRAVISIA AQUILEGA (Salisb.) Mez in DC. Monogr. Phan. 9:173.
1896.

6a. GRAVISIA AQUILEGA var. AQUILEGA

Bromelia aquilega Salisb. Parad. Lond. pl. 40. 1806.

COSTA RICA, VENEZUELA, TRINIDAD, TOBAGO, GUIANA, BRAZIL.

6b. GRAVISIA AQUILEGA var. CHRYSOCOMA (Baker) L. B. Smith, comb. nov.

Aechmea chrysocoma Baker, Handb. Bromel. 44. 1889.

Hohenbergia chrysocoma E. Morr. ex Baker, Handb. Bromel. 44. 1889, nomen in synon.

Gravisia chrysocoma (Baker) Mez in Mart. Fl. Bras. 3, pt. 3: 301, pl. 65. 1892.

In living material, the bright yellow secondary and floral bracts of var. chrysocoma are strikingly different from the dull green ones of typical Gravisia aquilega, but the distinction is lost in most herbarium specimens.

BRAZIL: Cultivated, Devansaye (LG, type or type strain). PER-NAMBUCO: Afogados to Boa Viagem, Baker & Collins (GH). Caxagua, Ridley, Lea & Ramage (BM). BAHIA: Jacobina, Foster 91 (GH).

TILLANDSIA SETACEA Sw. Fl. Ind. Occ. 1:593. 1797.

Renealmia recurvata B. L. Sp. Pl. 287. 1753.

Tillandsia tenuifolia sensu auctt. plur., non L. 1753.

Linnaeus' original publication of Tillandsia tenuifolia in the first edition of the "Species Plantarum" (p. 286) was based on two references, Van Royen and Plumier. In the second edition in 1762 (p. 440), he omitted the Plumier reference and by retaining the Van Royen automatically made it the type. That he added other references is beside the point. Thanks to the kindness of Dr. Lam, I have received from the Rijksherbarium, Leiden, a photograph of Van Royen's specimen. This proves to be the same as Tillandsia pulchella Hooker and curiously enough already has been so annotated by Mez. Thus the nomenclature of that species must be revised as follows:

TILLANDSIA TENUIFOLIA L. Sp. Pl. 286. 1753.

TILLANDSIA TENUIFOLIA var. TENUIFOLIA

Tillandsia foliis linearis-subulatis integerrimis imbricatis,
caule oblongo, spica simplici laxa Van Royen, Prodr. Lugdb.
 25. 1740.

Tillandsia pulchella Hook. Exot. Fl. 2:pl. 154. 1825.

TILLANDSIA TENUIFOLIA var. DISTICHA (L. B. Smith) L. B. Smith,
 comb. nov.

Tillandsia pulchella var. disticha L. B. Smith, Arquiv. Bot.
 Estado São Paulo nov. ser. 1:114, pl. 117. 1943.

TILLANDSIA TENUIFOLIA var. SAXICOLA (L. B. Smith) L. B. Smith,
 comb. nov.

Tillandsia pulchella var. saxicola L. B. Smith, Arquiv. Bot.
 Estado São Paulo nov. ser. 1:115, pl. 118. 1943.

TILLANDSIA TENUIFOLIA var. SURINAMENSIS (Mez) L. B. Smith, comb.
 nov.

Tillandsia pulchella var. surinamensis Mez in Mart. Fl. Bras.
 3, pt. 3:603. 1894.

TILLANDSIA TENUIFOLIA var. VAGINATA (Wawra) L. B. Smith, comb.
 nov.

Tillandsia pulchra var. vaginata Wawra, Oesterr. Bot.
 Zeitschr. 30:224. 1880.

MEXICO

PITCAIRNIA MATUDEAE L. B. Smith, sp. nov.

Pitcairnia densiflora sensu Matuda, Bromel. Chiapas in Anal.
 Inst. Biol. México 23, No. 1, 2:96. 1952, as to specimen.

A P. densiflora Brongn., cui affinis, foliorum petiolis serrulatis, scapi bracteis haud foliaceo-laminatis, bracteis florigeris apice patentibus vel reflexis differt.

Flowering shoot erect, 35 cm. high; leaves over 1 m. long, much exceeding the inflorescence; sheaths broadly ovate, 3 cm. long, entire, dark castaneous, densely brown-lepidote; petioles distinct, narrow, involute, obscurely serrulate; blades linear-lanceolate, acuminate at both ends, to 5 cm. wide, entire, soon glabrous, narrowly channeled toward base; scape ca. 8 mm. in diameter, brown-flocculose at first; scape-bracts erect, densely imbricate, elliptic, apiculate, not at all foliaceous, the highest membranaceous, red; inflorescence densely subcylindric, obtuse, 13 cm. long, the axis brown-flocculose; floral bracts imbricate but spreading to reflexed near apex, elliptic, acute, 45 mm. long, much exceeding the sepals, entire, membranaceous; pedicels short but slender; sepals oblong, acute, 30 mm. long, thin, the lateral ones carinate; petals over 6 cm. long, appendaged; ovary 2/3 superior; ovules caudate. Pl. I, fig. 5: Inflorescence x 1/2; fig. 6: Sepal x 1.

✓ Type in the Gray Herbarium of Harvard University, collected on Monte Ovando, State of Chiapas, Mexico, April 9-12, 1937, by E. Matuda (No. 1854).

TILLANDSIA DRESSLERI L. B. Smith, sp. nov.

T. disticha H.B.K. in systema Mezii proxima sed bulbo elongato, foliorum laminis majoribus reflexis, sepalis subaequaliter liberis differt. A T. balbisiana Schult. cuius habitu valde imitans, staminibus quam petalis brevioribus (Subgen. Allardtia) differt.

Stemless, flowering 35 cm. high; leaves bulbous-rosulate, covered with minute subappressed cinereous scales; sheaths ovate, to 10 cm. long, tightly clasping the scape and forming a narrowly ovoid bulb; blades strongly reflexed, very narrowly triangular, filiform-acuminate, to 55 cm. long, 15 mm. wide, involute toward apex; scape erect, soon glabrous, sulcate when dry; scape-bracts densely imbricate and concealing the scape, subfoliaceous with small elliptic sheaths and elongate reflexed blades, very densely lepidote; inflorescence bipinnate, 12 cm. long, subdigitate; primary bracts incompletely known but their sheaths shorter than the spikes, very densely lepidote; spikes divergent, oblong-lanceolate, 3-8 cm. long, 15 mm. wide, to 16-flowered, strongly complanate; rhachis flexuous, winged, sparsely and obscurely punctulate-lepidote; floral bracts densely imbricate but narrow and more or less exposing the rhachis, ovate, acute, to 18 mm. long, much exceeding the sepals, sharply carinate, subcoriaceous, glabrous, lustrous; flowers subsessile; sepals equally subfree, oblong-lanceolate, broadly acute, 12 mm. long, glabrous, nerved; petals blue-purple (! Dressler), the blades divergent, nearly 2 cm. long, exceeding the stamens. Pl. I, fig. 7: Inflorescence x 1/2.

✓ Type in the herbarium of the Missouri Botanical Garden, collected on trees, 8 miles south of Agua Nueva, State of Sinaloa, Mexico, December 31, 1949, by Robert L. Dressler.

COSTA RICA

VRIESEA APICULATA L. B. Smith, sp. nov.

A V. subsecunda Wittm., cui verisimiliter affinis, foliis rotundatis longe apiculatisque, floribus per anthesin vix secundis, sepalis extus dense punctulato-lepidotis differt.

Flowering shoot 23 cm. high, leaves about 15 in a subspredding rosette, to 25 cm. long, the lower half covered on both sides with appressed white scales; sheaths ovate, ca. 5 cm. long; blades narrowly ligulate, rounded and long-apiculate, 13 mm. wide, flat; scape erect; scape-bracts densely imbricate and wholly covering the scape, the lower subfoliaceous but much reduced, the upper elliptic, apiculate, very pale green; inflorescence subaxially 3-flowered; axis slender, punctate; floral bracts divergent and exposing much of the axis, broadly ovate, acute, 26 mm. long, exceeding the sepals, ecarinate, subcoriaceous, very pale green, punctulate-lepidote; flowers subsessile, not secund at an-

thesis; sepals broadly ovate, obtuse, 23 mm. long, 15 mm. wide, ecarinate, punctulate-lepidote on the outside; petals white, bearing 2 lanceolate scales at base, the blades 5-6 mm. long; stamens included. Pl. II, fig. 1: Apex of leaf x 1/2; fig. 2: Inflorescence x 1/2; fig. 3: Sepal x 1.

Type in the U. S. National Herbarium, collected in Costa Rica, by Robert G. and Catherine Wilson (No. 31), and flowered in cultivation.

VRIESEA HELICONIOIDES (H.B.K.) Hook. ex Walp. var. *POLYSTICHA*
L. B. Smith, var. nov.

A var. *heliconioides* floribus plus quam distiche ordinatis differt.

Differing from the typical variety in having the flowers in more than 2 ranks.

Type in the U. S. National Herbarium, collected in Costa Rica, in 1960, by Robert G. and Catherine Wilson (No. 29), and flowered in cultivation.

VRIESEA HYGROMETRICA (André) L. B. Smith & Pittendrigh var.
ANGUSTIFOLIA L. B. Smith, var. nov.

A var. *hygrometrica* foliorum laminis angustioribus differt.

Leaf-blades only 25 mm. wide.

Type in the U. S. National Herbarium, collected in Costa Rica, by Robert G. and Catherine Wilson (No. 32) and flowered in cultivation.

WEST INDIES

PITCAIRNIA

The West Indian species of *Pitcairnia* are all endemic to that area with the single exception of *P. integrifolia* Ker-Gawl. which barely extends outside onto the Paria Peninsula of Venezuela, just across from Trinidad. Within the area there is still further endemism, Cuba having one endemic species, Jamaica two, and Hispaniola four. Porto Rico has a single species shared with the Virgin Islands and possibly elsewhere. The remaining species are scattered through the Lesser Antilles, except the already noted *P. integrifolia* which is just in Trinidad and the adjacent mainland.

In spite of their geographic separation, the West Indian species of *Pitcairnia* show few consistent characters to enable one to distinguish them taxonomically from the remainder of the genus. The petals are appendaged, but with partial exception in *P. integrifolia*. The seeds are narrow with a very narrow lateral section of the wing and usually a broad flat apical section. This last character is fairly distinctive but is not typical of *P. albucifolia*. The group is revised as follows:

1. Racemes dense especially toward apex; inflorescence simple.
Lesser Antilles.

2. Floral bracts broadly ovate.....1. P. spicata
 2. Floral bracts lanceolate.....2. P. albucifolia
 1. Racemes lax throughout.
 3. Pedicels 15-30 mm. long, stiffly spreading. Jamaica.
 4. Leaf-blades 15 mm. wide.....3. P. bromeliifolia
 4. Leaf-blades to 32 mm. wide.....4. P. platyphylla
 3. Pedicels not over 12 mm. long, or when rarely longer, then
 curved and secund. Non-Jamaican West Indies.
 5. Leaves evenly spinose-serrate throughout, not more than 20
 mm. wide.
 6. Leaf-blades 10-20 mm. wide; flowering plant 1-2 m. high.
 Porto Rico, Lesser Antilles.....5. P. angustifolia
 6. Leaf-blades 4 mm. wide; flowering plant 55 cm. high.
 Dominican Republic.....6. P. elizabethae
 5. Leaves (or the larger ones when dimorphic) largely entire or
 if evenly spinose, then much more than 20 mm. wide (P.
 gracilis, P. latifolia form).
 7. The leaves of the fertile rosette dimorphic and the inflo-
 rescence simple or few-branched; leaf-blades to 18 mm.
 wide.
 8. Sepals 14-16 mm. long. Cuba.....12. P. cubensis
 8. Sepals 17-25 mm. long. Hispaniola.
 9. Petals red; sepals acute.....7. P. fuertesii
 9. Petals yellow or cream; sepals obtuse..8. P. samuelssonii
 7. Leaves of the fertile rosette all alike or the inflores-
 cence much branched.
 10. Sepals to 25 mm. long; leaf-blades mostly more than 20
 mm. wide. Lesser Antilles.
 11. Flowers erect or suberect; leaves all alike; inflores-
 cence simple or few-branched.....9. P. latifolia
 11. Flowers spreading or nutant, often secund; leaves dimor-
 phic; inflorescence much branched.....10. P. gracilis
 10. Sepals 14-20 mm. long; leaf-blades 10-19 mm. wide.
 12. Inflorescence much branched. Trinidad.
 11. P. integrifolia
 12. Inflorescence simple or few-branched.
 13. Sepals 14-16 mm. long; inflorescence mostly simple.
 Cuba.....12. P. cubensis
 13. Sepals 20 mm. long; inflorescence mostly branched.
 Dominican Republic.....13. P. jimenezii

1. **PITCAIRNIA SPICATA** (Lam.) Mez in DC. Monogr. Phan. 9:396.
 1896.

1a. **PITCAIRNIA SPICATA** var. **SPICATA**

Bromelia spicata Lam. Encycl. 1:146. 1783.

Petals red.

Lesser Antilles: St. Kitts, Guadeloupe, Dominica, Martinique.

1b. **PITCAIRNIA SPICATA** var. **SULPHUREA** (Andr.) Mez in DC. Monogr.
 Phan. 9:393. 1896.

Pitcairnia sulphurea Andr. Bot. Repos. 4: pl. 249. 1802.

Petals yellow.

Lesser Antilles: Dominica, St. Vincent.

2. PITCAIRNIA ALBUCIFOLIA Schrad. Blumenb. 24. 1827.

Lesser Antilles: Martinique, St. Vincent.

3. PITCAIRNIA BROMELIIFOLIA L'Hérit. Sert. Angl. 7, pl. 11. 1789

(fide International Code Bot. Nomencl. 225. 1956); Ait.

Hort. Kew. 1:401. 1789; Sw. Fl. Ind. Occ. 1:580. 1797.

Hepetis angustifolia Sw. Prodr. 56. 1788, non Pitcairnia angustifolia Ait. 1789.

In both of his monographs, Mez identifies Hepetis angustifolia Sw. with the species of Porto Rico, in spite of the fact that Swartz cited "Jamaica" in his original description and later reduced his own species to Pitcairnia bromeliifolia. Records other than Jamaica would appear to be misidentifications.

4. PITCAIRNIA PLATYPHYLLA Schrad. Blumenb. 26. 1827.

Jamaica.

With no other distinction than a broader leaf it is doubtful if this merits separation from Pitcairnia bromeliifolia, but it would be well to examine recent material before reducing it.

5. PITCAIRNIA ANGUSTIFOLIA Ait. Hort. Kew. 1:401. 1789.

Pitcairnia ramosa Jacq. f. Eclog. Pl. 1:154, pl. 79. 1816.

Pitcairnia tomentosa Dietr. Lex. Nachtr. 6:305. 1820, in synonym; Dietr. ex Beer, Bromel. 64. 1857.

Pitcairnia angustifolia "(Sw.) Redouté" ex Mez in DC. Monogr. Phan. 9:405. 1896.

Porto Rico, Virgin Islands, and doubtfully elsewhere in the Lesser Antilles.

In using Pitcairnia angustifolia as a new combination, Mez erred both in the application of the basionym, Hepetis angustifolia Sw., and in the use of a later homonym of Pitcairnia angustifolia of Aiton.

6. PITCAIRNIA ELIZABETHAE L. B. Smith, Bromel. Soc. Bull. 8:20, figs. 1958.

Dominican Republic: Barahona.

7. PITCAIRNIA FUERTESII Mez, Fedde Rep. Spec. Nov. 12:415. 1913.

Pitcairnia tomentosa sensu Mez in DC. Monogr. Phan. 9:389. 1896, non Dietr. ex Beer 1857.

Pitcairnia fulgens sensu Mez in Urban, Symb. Ant. 8:87. 1920, non Dcne. ex Dietr. 1851.

Dominican Republic, Haiti (?).

Urban cited Taylor 109 from the vicinity of San Lorenzo on Samaná Bay as the basis for reporting Pitcairnia fulgens Dcne. from the Dominican Republic. Pitcairnia fulgens Dcne. is probably a synonym of the Brazilian P. flammea Lindl., and Taylor 109 in the New York Botanical Garden is P. fuertesii Mez.

Plate I

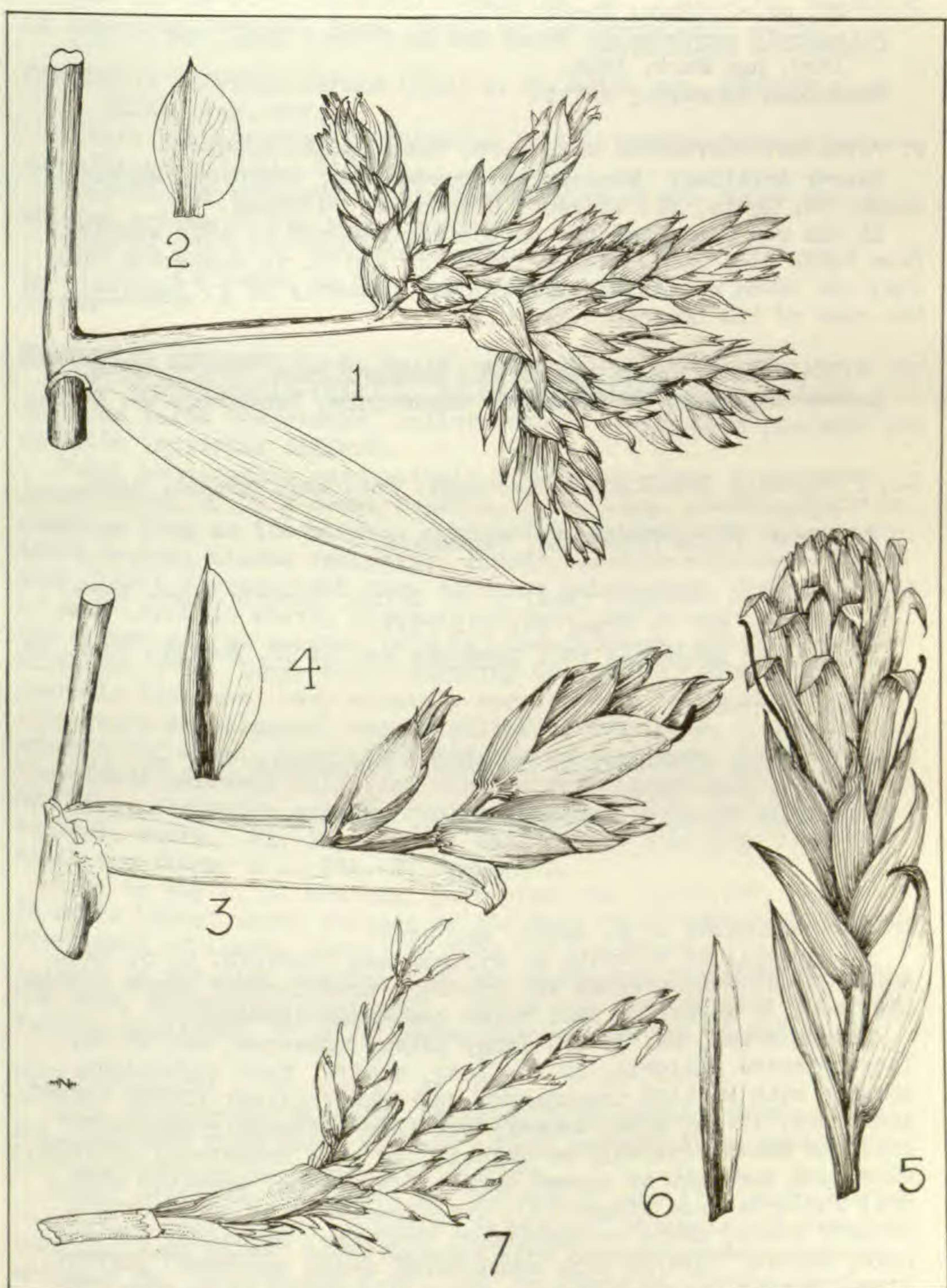


Fig. 1, 2: *Gravisia fosteriana*; fig. 3, 4: *Gravisia rubens*;
fig. 5, 6: *Pitcairnia matudae*;
fig. 7: *Tillandsia dressleri*.

8. *PITCAIRNIA SAMUELSSONII* L. B. Smith, Contrib. Gray Herb. 117: 28, pl. 2, figs. 24-26. 1937.

Pitcairnia xanthocalyx sensu Mez in Urban, Symb. Ant. 8:87. 1920, non Mart. 1848.

Dominican Republic, Haiti.

9. *PITCAIRNIA LATIFOLIA* Ait. Hort. Kew. 1:401. 1789.

Lesser Antilles: Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, Grenadines, Grenada.

It has not been possible to confirm records of this species from Porto Rico and Dominican Republic and it is suspected that they are based on misidentifications, probably of *P. fuertesii* in the case of the Dominican Republic.

10. *PITCAIRNIA GRACILIS* Mez in DC. Monogr. Phan. 9:407. 1896.

Lesser Antilles: Montserrat, Guadeloupe, Dominica, St. Lucia, St. Vincent, Grenada.

11. *PITCAIRNIA INTEGRIFOLIA* Ker-Gawl. Bot. Mag. 36: pl. 1462. 1812.

Trinidad; Paria Peninsula, Venezuela.

12. *PITCAIRNIA CUBENSIS* (Mez) L. B. Smith, Contrib. Gray Herb.

117:24, pl. 2, figs. 12, 13. 1937.

Pitcairnia latifolia var. *cubensis* Mez in DC. Monogr. Phan. 9: 396. 1896.

Cuba: Oriente.

13. *PITCAIRNIA JIMENEZII* L. B. Smith, Phytologia 7:1, pl. 1,

figs. 3-5. 1959.

Dominican Republic: Puerto Plata.

PERU

GREIGIA AMAZONICA L. B. Smith, sp. nov.

G. danielii L. B. Smith in systema mea (Contrib. U. S. Nat. Herb. 29:286-292) proxima sed bracteis exterioribus dense lepidotis, sepalis majoribus basi solum castaneis differt.

Caudex erect, ca. 15 cm. long; leaves numerous, ca. 65 cm. long; sheaths elliptic, 10 cm. long, entire, dark castaneous, covered with whitish transparent appressed scales; blades linear, acuminate, 15 mm. wide, densely but inconspicuously appressed-lepidote above, sparsely so beneath, at base subdensely serrate with dark straight or curved spines 5 mm. long, involute when dry; inflorescence single (?), few-flowered; the outer bracts broadly ovate, acute or the lowest laminate, exceeding the sepals, entire, covered with conspicuous white appressed scales; floral bracts broadly elliptic, acute, mucronate, shorter than the sepals, densely pale-lepidote; sepals free, slightly asymmetrical, subtriangular, acuminate, mucronate, 25 mm. long, alate-carinate, green except the castaneous base, glabrous or nearly so; petals 35 mm. long, naked; pollen grains spherical, smooth.

Pl. II, fig. 4: Inflorescence x 1/2; fig. 5: Sepal x 1.

Type in the U. S. National Herbarium, No. 2,340,435, collected in Amazonian lowland, Peru, 1960, by Lee Moore (No. A-120).

NEOREGELIA ELEUTHEROPETALA (Ule) L. B. Smith var. BICOLOR L. B. Smith, var. nov.

A var. eleutheropetala foliorum laminis subtus dense adpresso-albido-lepidotis differt.

Leaf-blades strongly bicolorous because of the dense minute whitish scales on the under surface.

Type in the U. S. National Herbarium, Nos. 2,343,779 and 2,343,780, collected in the vicinity of Loreto, Peru, by Lee Moore.

NEOREGELIA MOOREANA L. B. Smith, sp. nov.

A N. myrmecophila (Ule) L. B. Smith, cui affinis, laminis foliorum valde recurvatis, inflorescentia simplicissima, sepalis connatis lepidotis differt.

Plant propagating vegetatively by stolons 8 mm. in diameter; leaves about 20 in a dense rosette, 3 dm. long; sheaths elliptic, about as long as the blades, subdensely lepidote with brown-centered scales; blades recurving, linear, caudate-attenuate, 15 mm. wide, laxly serrate with dark antorse spines 2 mm. long, sparsely pale-lepidote above, glabrous beneath; inflorescence sunk in the center of the rosette, simple, few-flowered; floral bracts elliptic, 3 cm. long, about equaling the sepals, cucullate, sparsely lepidote, very minutely serrate with soft spines; pedicels short and obscure; sepals elliptic, cucullate, 13 mm. long, connate for 4 mm., sparsely lepidote; petals 30 mm. long, white, the blades narrowly elliptic; ovary slenderly cylindric, about 12 mm. long; placentae apical; ovules short-caudate; epigynous tube conical, short. Pl. II, fig. 6: Leaf apex x 1/2; fig. 7: Floral bract and flower x 1; fig. 8: Sepal x 1.

Type in the U. S. National Herbarium, No. 2,338,767, collected in small trees, upper reaches of the Napo River near Iquitos, Department of Loreto, Peru, in 1960, by Lee Moore.

This is the same species that Mr. Moore has distributed under the name, Neoregelia ossifragi. Since the earlier name was never validly published, I am following his request not to use it.

PUYA VARGASIANA L. B. Smith, sp. nov.

A P. bicolor Mez atque P. araneosa L. B. Smith, quibus affinis, bracteis florigeris maximis sepala superantibus, sepalis linear-lanceolatis acuminatis differt.

Known only from fragments but certainly over 1 m. high; leaves ca. 5 dm. long; blades narrowly triangular, brown-lanate beneath, soon glabrous above, laxly serrate with slender curved antorse spines 5 mm. long; scape over 1 cm. in diameter, finely brown-lanate; scape-bracts erect, imbricate but exposing much of the scape, narrowly ovate with long linear subentire blades, subdensely pectinate-serrate, red, finely brown-lanate, becoming glabrous with age; inflorescence laxly bipinnate, finely brown-

lanate except the petals; primary bracts lanceolate, acuminate, to 8 cm. long, at least half as long as the axillary branches, chartaceous, red, the lower ones sparsely serrate; racemes with a long sterile naked base, arched-spreading, laxly few-flowered; floral bracts more or less secund with the flowers, lanceolate, acuminate, to 5 cm. long, exceeding the sepals, entire, thin; pedicels inconspicuous, obconic, 5 mm. long; sepals narrowly lance-triangular, filiform-acuminate, 43 mm. long; petals (immature) naked. Pl. II, fig. 9: Branch of inflorescence x 1/2; fig. 10: Sepal x 1.

Type in the Gray Herbarium of Harvard University, collected at Amaibamba, Santa Bárbara, Province of Convención, Department of Cuzco, Peru, December 30, 1948, by C. Vargas (No. 7558).

BRAZIL

PITCAIRNIA EGLERI L. B. Smith, sp. nov.

A P. torresiana L. B. Smith, cui affinis, foliorum laminis persistentibus basi serratis differt.

Stemless, flowering 35 cm. high but the leaves exceeding the inflorescence; leaves dimorphic, all persistent, to 60 cm. long; sheaths of the outer leaves broadly ovate, small, dark castaneous, pale-lepidote toward the apex, very narrowly laminate, those of the inner leaves elongate; blades of the inner leaves linear, filiform-acuminate, to 9 mm. wide, serrulate and sparsely lepidote toward base, elsewhere entire and glabrous; scape erect, very slender, soon glabrous; inflorescence simple, laxly racemose, 9-11 cm. long, rather few-flowered; floral bracts spreading, lanceolate, to 8 mm. long; pedicels ascending, slender, 15 mm. long, much exceeding the bracts; flowers red; sepals oblong, broadly rounded at apex, 13 mm. long, ecarinate; petals 4 cm. long, bearing a scale at base; ovary slightly more than 1/2 superior; ovules caudate. Pl. II, fig. 11: Base of plant x 1/2; fig. 12: Inflorescence x 1/2; fig. 13: Flower x 1; fig. 14: Sepal x 1.

Type in the U. S. National Herbarium, No. 2,324,964, collected on wet sandstone cliff, Creputiá, Rio Cururú, region of the Alto Tapajós, State of Pará, Brazil, February 3, 1960, by W. A. Egler (No. 1246) and Raimundo. Isotype in the Museu Paraense "Emilio Goeldi."

This new species is dedicated as a sorrowful tribute to my friend and colleague, the late Dr. Walter Alberto Egler, who lost his life on August 28, 1961, while exploring the Rio Jari.

ARGENTINA

PITCAIRNIA ORANENSIS L. B. Smith, sp. nov.

A P. chiriguana Castellanos, cui affinis, scapi bracteis remotis, sepalis oblongo-lanceolatis majoribus differt.

Flowering 1 m. high; leaves dimorphic, some reduced to large ovate dark castaneous ferruginous-lepidote sheaths, others normally functional with slender serrulate petioles; blades persistent, linear-lanceolate, long-acuminate at both ends, over 8 dm.

Plate II

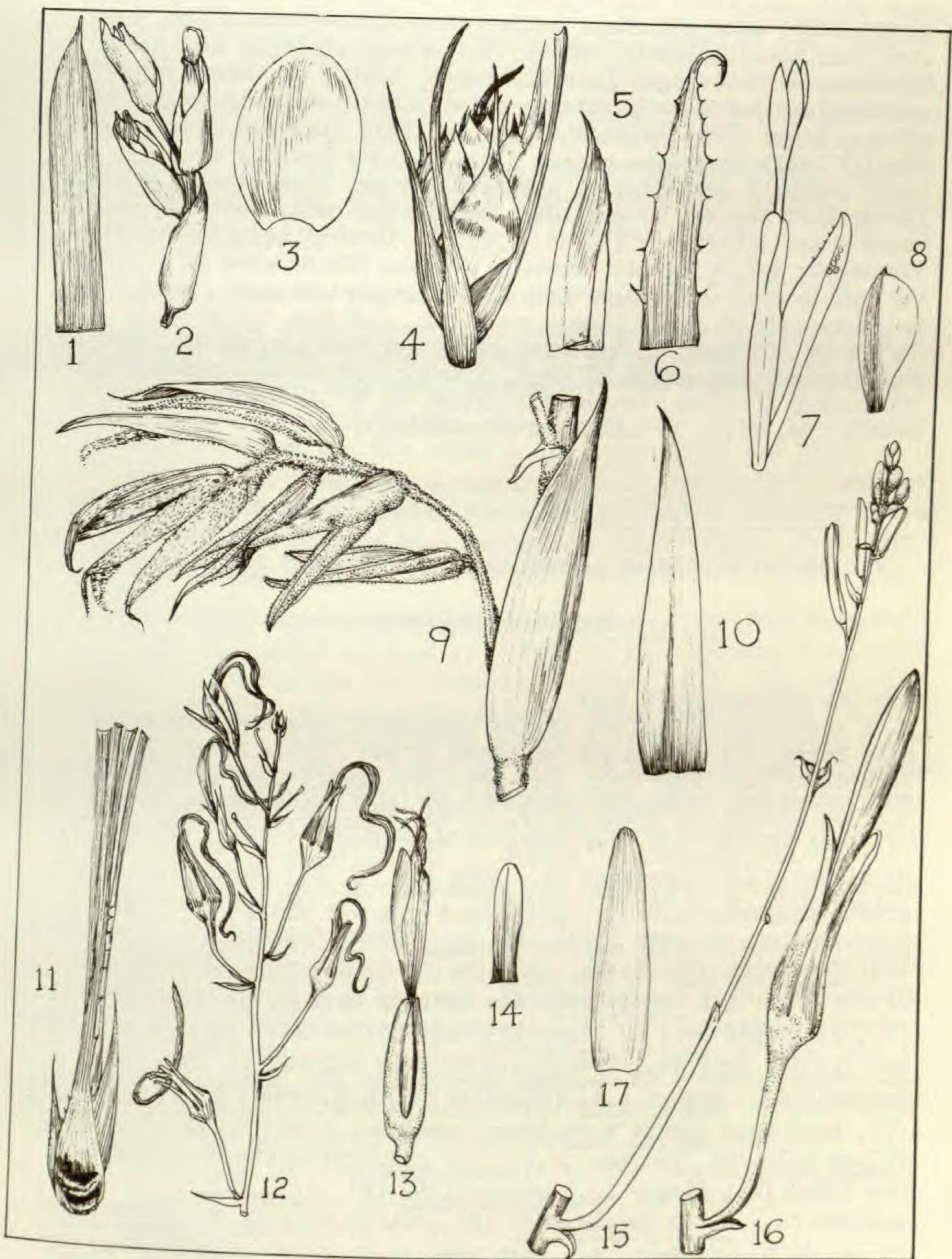


Fig. 1-3: *Vriesea apiculata*; fig. 4, 5: *Greigia amazonica*; fig. 6-8: *Neoregelia mooreana*; fig. 9, 10: *Puya vargasiana*; fig. 11-14: *Pitcairnia egleri*; fig. 15-17: *Pitcairnia oranensis*.

long, 24 mm. wide, entire, channeled toward base, covered beneath with white appressed scales, glabrous above; scape erect, 8 mm. in diameter, soon glabrous; scape-bracts lance-triangular, entire, all but the lowest remote; inflorescence (only one known) bipinnate with a single lateral branch, over 3 dm. long, appressed-stellate but soon glabrous; primary bract broadly ovate, apiculate, 6 mm. long; racemes elongate, laxly flowered with long sterile laxly bracteate bases; floral bracts broadly ovate, 5 mm. long; pedicels ascending at anthesis, 15 mm. long, sepals oblong-lanceolate, obtuse, 27 mm. long, ecarinate; petals obtuse, naked; ovary 4 mm. inferior. Pl. II, fig. 15: Lateral branch of inflorescence x 1/2; fig. 16: Flower x 1; fig. 17: Sepal x 1.

Type in the Gray Herbarium of Harvard University, collected in semi-shade on sandy limestone cliff, quebrada (ravine) in Cerros de Rio Ytau, 65 km. west of Manuel Pedraza, 12 km. west of San Pedrico, Department of Oran, Province of Salta, Argentina, 800 meters altitude, October 31, 1938, by W. J. Eyerdam and A. A. Beetle (No. 22795 in Goodspeed Expedition).

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MATERIALS TOWARD A MONOGRAPH OF THE GENUS VERBENA. IV

Harold N. Moldenke

VERBENA BIPINNATIFIDA Nutt.

A continuation follows of the listing of specimens cited by Miss Perry, but not as yet examined by me: TEXAS: Bexar Co.: Berlandier 429=?1749 (G), 1449=189 (G); Eggert s.n. [San Antonio, 4 April 1901] (G); Groth 30 (F, G, W); Moore & Steyermark 3001 (E); Von Schrenk s.n. [vicinity of San Antonio, April 1919] (G); Wilkinson 9 (E). Brazoria Co.: Bush 205 (E, W). Comal Co.: Lindheimer 1072 (E, F, G, W), 1073 (E, F, G, W). Dallas Co.: Eggert s.n. [Dallas, 22 June 1899] (E), s.n. [near Garland, 24 June 1899] (E); Reverchon 739 (E, W), 1962 (E, F, G, W), s.n. [Dallas] (G, W). De Witt Co.: Howell 308 (W). Edwards Co.: M. E. Jones 26228 (E). Gillespie Co.: G. Jermy 183 (E). Goliad Co.: Berlandier 2428=998 (E, G). Hays Co.: Trelease s.n. [San Marcos, 11 June 1897] (E). Hemphill Co.: Eggert s.n. [Canadian, 10 Aug. 1900] (E); Howell 111 (W). Hood Co.: Eggert s.n. [near Granbury, 4 May 1900] (E); E. J. Palmer 6510 (E). Kaufman Co.: Tyler s.n. [vicinity of Terrell, 4 May 1904] (W). Kinney Co.: Mearns 1252 (W), 1274 (W), 1394 (W). Navarro Co.: E. J. Palmer 7821 (E). Parker Co.: S. M. Tracy 7999 (E, F, G, W). Tarrant Co.: Ruth 107 (E, F, G, W). Taylor Co.: Eggert s.n. [near Abilene, 7 June 1900] (E); S. M. Tracy 8000 (E, F). Travis Co.: E. J. Palmer 33389 (E, G). Victoria Co.: Eggert s.n. [near Victoria, 10 April 1900] (E); Maxon 3808 (W); E. J.